width, and minimal vegetative clearing Roads in visually-sensitive areas usually cost more to construct because of a need to reduce visual contrast of the cut and fill slopes.

Future construction of local roads for timber management can reduce visual quality. These roads may also improve viewing pleasure by creating scenic overlooks and additional sightseeing opportunities on a particular road

9. Cultural Resources

There are extensive, fragile and nonrenewable cultural resources on the Forest, and on private and other public lands which are managed through cooperative programs (e g , Range Evaluation project) These include prehistoric sites estimated to date from at least 8-10,000 B C to historic times, and more recent historic sites

The Cultural Resource Management (CRM) program complies with provisions of the National Historic Preservation Act (NHPA) of 1966 (P L 89-665), Executive Order 11593· Protection and Enhancement of the Cultural Environment, 1971, and the Archaeological Resources Protection Act (ARPA) of 1979 (P L 96-95)

The Forest Service Manual (FSM 2361 and 2363) is the primary guide for conducting the cultural resource management program Used in conjunction with the Manual are the Code of Federal Regulations (Parts 36 and 60) and guides provided by the Advisory Council on Historic Preservation (ACHP) Various Programmatic Memoranda of Agreement (PMOA) documents are also utilized

Cultural resources on the Forest occur in one of three relative chronological eras prehistoric, protohistoric, and historic The first represents American Indian activity up to the time of European contact and influence The second represents unrecorded American Indian activity after the influence of European contact The third, historical cultural resources, is the remains of European and American exploration and settlement
The cultural resources found on the Forest include, but are not limited to, prehistoric quarries, workshops, campsites, caves, historic cabins, mines, railroad grades, and homesteads; and historic Forest Service structures such as lookouts, guard stations, and Civilian Conservation Corps campgrounds

Inventory of cultural resources began in 1974. An overview of historical and archaeological resources of the Forests in northeast Oregon was completed in 1978 While early surveys often did not meet the National Historic Preservation Act standards, all surveys since 1981 have complied with those standards Currently, cultural resource surveys are concentrated in areas with planned projects, such as timber sales, land exchanges, and range developments Through the 1988 field season, 785,000 acres (54 percent of the Forest) had been surveyed

The location of known and potential sites is confidential to protect them from vandalism As of 1988, the Forest had inventoried 571 historic and 1,395 prehistoric sites for a total of 2,242 sites There is potential for scientific recovery and study of the past 10,000 - 12,000 years of human existence in this region of Oregon.

As cultural resources are identified and recorded during a cultural resource survey, they receive a preliminary evaluation of significance. This preliminary evaluation follows criteria contained in FSM 2361 and 2363, 36 CFR 60 6 and 800, and various Programmatic Memorandums Of Agreement (PMOA) between the USDA Forest Service (Pacific Northwest Region), Oregon State Historic Preservation Officer, and the Advisory Council on Historic Preservation. Only the Forest Archaeologist or other qualified cultural resource management specialists conduct evaluations, and usually an evaluation is completed during the initial recording of a site

Cultural resources are evaluated to determine if they qualify for nomination to the National Register of Historic Places (NRHP) This evaluation does nothing but determine

significance. Qualifying properties are "significant" and are *Class I*. Properties requiring further evaluation to determine significance are *Class II*, but the policy is to try to avoid this classification. Class I and Class II properties are provided management consideration. *Class III* properties are not significant and are not considered any further.

Five thematic nominations for the National Register of Historic Places are being processed or have been completed for the Forest. They are

a Depression-era administrative sites in John Day, Oregon.

b. Sumpter Valley Railroad between Baker City and Prairie City, Oregon.

c. Main spur of Oregon and Northwestern Logging Railroad down the Middle Fork John Day River below Bates, Oregon.

d Hines Lumber Company Railroad from Crane to Burns, and up to Seneca, Oregon, with logging spurs trending eastward and westward into the Forest.

e Depression-era administrative sites at the Bear Valley Work Center, Bear Valley Ranger District.

As the surveys near completion, other significant properties will be prepared for nomination. Many sites of a similar kind and era will be prepared for a single archaeological district nomination. Plans for thematic group nominations will also be developed Both district and thematic nominations are cost-effective

a. *Relationship Between Forest Management and Cultural Resources*

Two types of cultural resources that could be affected by management activity are:

Prehistoric: Heavy concentrations of lithic sites, including quarries, quarry workshops, seasonal camps, resources procurement, hunting stations and such

Other sites may include, but are not limited to, cambium-peeled trees, earthen alignments, fire hearths, house pits/villages, kill/butcher sites, middens, ovens, rock art, rock shelters, and rock structures like cairns, hunting blinds, alignments, etc

Historic· Includes, but is not limited to, linear features like placer ditches, railroad grades, trails, wagon roads, and stock driveways; buildings and structures, including log cabins and depression-era administrative sites; dendroglyphs, livestock management sites like log troughs and salt licks, and mines

Potential effects of range management on cultural resources come from construction of improvements like fences, corrals, and stock tanks, from vegetation treatments; and from concentrations of livestock in the vicinity of a cultural site. The impacts from range improvements are limited, can be defined very clearly on the ground, and are easily avoided with advance planning. Site trampling by cattle tends to be more generalized and can result in displacement of cultural materials, as well as flaking, nicking, and breakage of any stone flakes or tools on the surface. Ground compaction causes subsurface breakage of artifacts and can also change the levels at which they lie, thereby altering their relationship.

Grazing has taken place on the Forest since the turn of the century The impacts of current use are difficult to assess Range developments and livestock use predate surveys for cultural sites Subsequent reconnaissance surveys along ridgetop driveways and at developed springs have identified a number of prehistoric sites It is likely that the surface components that may once have existed in some of these areas have long since been trampled beneath the surface

Today there are few obvious conflicts between cultural resources and range management As there is a high correlation between natural springs and cultural sites (especially on the southern two-thirds of the Forest), the greatest potential for site impacts would be from concentrated livestock use or spring developments at those localities

Because timber management activities often disturb the ground, they have the potential to damage or destroy cultural resources. These effects have been minimized through systematic inventory and evaluation of cultural resources prior to harvest These efforts have accelerated the identification of cultural resources on the Forest Some undiscovered sites will probably be damaged

A significant increase in water flow or streamcourse changes may affect cultural resources by either washing them away, exposing them, or burying them Since a large number of the Forest's archaeological sites occur in association with water (Steggell 1985), streamside stability improvements will likely improve long-term preservation of cultural resources There are no significant interactions between cultural resources and fish

Frequently, the qualities that result in selection of an area as a campsite or a picnic spot today are the same ones which were valued by people in prehistoric or early historic times This may damage cultural resources on the site.

Public use of developed sites and increasing use of dispersed areas may result in compaction and displacement of artifact-bearing sediments This may indirectly contribute to loss of cultural resources because of higher potential for vandalism and relic collecting. Recreational artifact collection creates a permanent loss of historic and prehistoric data by removing artifacts from the context of the sites in which they are found. On the other hand, recreation may also provide an opportunity for education and protection through interpretive programs

The majority of trails on the Forest coincide with prehistoric and early historic travelways Effects of past foot-trail construction and use have been minimal

Much of the Forest's road system has developed along routes originally used as prehistoric travelways, prospectors' trails, and/or sheep driveways Therefore, roads have considerable potential for impacting cultural resources The amount of impact is determined largely by the location of the road and standards to which it was built. Significant impacts appear to be in valley bottoms along rivers, major creeks and their tributaries, and along ridgelines, saddles, and divides

Conflicts between cultural resources and road construction are sometimes encountered in management of historic linear features. Because these features may extend for miles, it is nearly impossible to avoid bisecting them at some point with a road crossing (The Sumpter Valley Railroad is a particularly good example) Many railroad grades have already been converted to roads

Roads have also increased motor vehicle access to cultural sites previously accessible only by foot or pack animals Thus, roads may have contributed to an increase in vandalism, especially at historic sites Since data are lacking about the condition of sites prior to road construction, the increase in vandalism cannot be verified

Road construction has promoted cultural resources by providing access to remote areas of the Forest, thus facilitating cultural resource inventory These same routes could benefit the public by improving access to sites selected for future interpretation.

Cultural resources occurring most frequently within Wilderness are cabins and high-elevation, prehistoric sites These properties are subject to the same inventory, evaluation, and consultation requirements as properties outside Wilderness To protect the "untrammeled" character of a Wilderness environment, above-ground, historic structures

are eventually removed or allowed to deteriorate naturally. This is done after creating a written and pictorial record in compliance with Section 106 of the Historic Preservation Act of 1966. There is no maintenance, rehabilitation, or on-site interpretation. Prehistoric sites may be stabilized through use of nonmechanized (hand) methods Any research studies must be consistent with the concept of Wilderness.

Mineral management effects would occur during exploration, development, and extraction of minerals, when surface-disturbing activities take place. These activities may identify previously unknown cultural properties at some sites, while damaging or destroying historic values at others The degree of interaction varies by commodity being explored, developed, or mined The type of mining operation, degree of environmental alteration required, and location of the development are also key factors.

Research on fire effects for cultural resources is incomplete and, on this Forest, completely lacking. However, impacts appear to be determined by the nature (controlled versus wildfire) and intensity of the fire, type of cultural resources within the area affected, and magnitude and location of fire suppression efforts

Fire will consume wooden structures unless they are protected through fire suppression activities Fire's affect on nonperishable artifacts and below-ground features is less severe. However, temperatures above 590° Fahrenheit can cause stone artifacts to spall, break, or crack (Pilles 1982). Fire can also contaminate dating properties at the site Fire may scorch or burn away rock art features Combustion temperatures may also affect faunal and shellfish remains, soil constituents, and site factors that are important in archaeological research. Fire and subsequent erosion may expose artifacts to undesirable weathering processes and to vandalism (Pilles 1982; Kelly and Mayberry 1979)

Suppression activities associated with fire are also of concern. Construction of firebreaks, heliports, and fire camps may shatter, bury, or displace artifacts, and completely destroy small sites (Eisler et al. 1979; Kelly and Mayberry 1979) In addition, past fire suppression practices have led to heavy fuel loadings and an increased threat of intense fires.

Fire can benefit cultural resources by removing ground cover, thereby exposing the surface and helping to detect sites in heavily-vegetated areas Controlled burns can reduce wildfire potential and lessen the risk of damaging archaeological sites during suppression activities Elimination of ground cover makes sites more vulnerable to artifact collectors because of improved visibility.

10 Wilderness

There are two designated wilderness areas managed by the Malheur National Forest: Strawberry Mountain and Monument Rock.

Wilderness offers unique opportunities for physical challenge and solitude in natural settings where evidence of human activities is minimal In addition to special recreation experiences, wilderness provides diverse plant and wildlife habitats as well as summer forage for livestock.

Wilderness often contains important watersheds, collecting and channeling large quantities of water. The Strawberry Mountain Wilderness contains headwaters of major tributaries to the Malheur, John Day, and Silvies Rivers. Monument Rock Wilderness contains headwaters of the Little Malheur River and upper drainages of the South Fork Burnt River

In April 1942, the Strawberry Mountain wild area was established on the Malheur National Forest The name was changed to "Strawberry Mountain Wilderness" upon enactment of the 1964 Wilderness Act (P.L. 88-577), when it became part of a new National Wilderness Preservation System at 33,650 gross acres and 33,000 net acres. The 1984